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Fig. 19. *Scotogramma infuscata*, ♂, harpe and clasper.
Fig. 20. " *discolor*, ♂, harpe and clasper.
Fig. 21. " *phoca*, ♂, harpe and clasper.

ILLUSTRATIONS OF THE LARVÆ OF NORTH AMERICAN CULICIDÆ. — III.

BY HARRISON G. DYAR, PH.D.

The species figured herewith are largely the result of Professor John B. Smith's investigations on mosquitoes in New Jersey, of which he has given a preliminary account (Ent. News, XIII, 299–303, 1902). Professor Smith has handed me certain species obtained by his correspondents which I had not seen, and he requested two of them, Mr. H. Brehme and Mr. J. Turner Brakeley, to send living material. Mr. Brakeley especially responded most cordially and not only sent interesting material, but in collecting it, found a species new to New Jersey and previously unknown to Professor Smith, namely *Culex melanurus*. The jar sent by Mr. Brehme from the salt marshes of the Elizabeth River contained a mixture of *Culex sollicitans*, *C. tæniorhynchus*, *C. sylvestris* and *C. nigritulus*. The latter larva was a surprise, coming close to *territans* which has hitherto stood alone.

Culex tæniorhynchus *Wiedemann.*

Larvæ bred by Professor Smith with *sollicitans* "from eggs in the same piece of sod" (Ent. News, XIII, 300), sent by Mr. Brehme as noted above and given me by Mr. Kotinsky from a culture at the Insectary of the Department of Agriculture which had been obtained at St. Georges Island, Md., by Mr. B. Eftyhithes. The larva differs from *sollicitans* by the shorter tube and differently shaped teeth of the lateral comb (Pl. II, Fig. 1, *B*), and comes nearest to *Stegomyia fasciata*, from which it differs in the comb (Pl. II, Fig. 2, comb of *fasciata*).

Larva.—(Pl. II, Fig. 1.) Head rounded pentagonal, flattened, normal, brown; antennæ moderate, uniform, slender, infuscated outwardly, paler at base, the tuft reduced to one hair, short, before the middle; mouth brush normal, well developed; dentate labial triangle low and broad, regularly and evenly toothed. Body normal, hairs moderate, diminishing posteriorly; air tube very short, not much

longer than broad, tapered on its outer half, with double row of pecten, the teeth two-spined, followed by a small tuft; dark brown. Lateral comb of eighth segment small, the spines irregularly shaped and digitately spined (Pl. II, Fig. 1, *B*) in an irregular double row. Anal segment short, ringed by the plate, tuft and brush normal, the brush without hairs before the barred area from which it arises. Anal processes four, moderate.

Culex nigritulus *Zetterstedt.*

Received only from the salt marshes as noted above.

Larva.—(Pl. II, Fig. 3.) Head rather large, broad through the eyes, narrow before, pale, brown-blotched on the vertex; eyes black, transverse; antennæ large, long, the outer third narrower, the tuft at the point of narrowing; black at base and tip, broadly white banded centrally. Body normal, hairs moderate, diminishing posteriorly. Air tube long and slender, as long or longer than in *territans*, but straight, regularly tapered, not concave; brown, the tip darker; double row of pecten of 3-spined teeth and scattered hairs beyond. Comb of eighth segment a patch of about 40 small spines in three rows. Anal segment about as long as wide, ringed by the plate, tuft and brush normal, the latter confined to the barred area. Anal processes four, moderate.

There seems a possibility of question whether this is the true *nigritulus* of Europe. Theobald's statement that he had taken the adults about old water butts scarcely suggests the habits of our salt marsh species.

Culex consobrinus *Desvoidy.*

Messrs. J. W. Dupree and H. A. Morgan have very kindly communicated to me specimens of this species, identified by them in Baton Rouge, La. The mature larva sent seems inseparable from that which I at first supposed to be *C. incidens* Thomson (Proc. Ent. Soc. Wash., V, 160, 1903). The antennal tuft is at the middle, the air tube about three times as long as wide, slightly inflated and with the peculiar prolongation of the pecten teeth into setæ, while the other characters agree. Several young larvæ also were sent in the bottle. They differ greatly. The antennal tuft is well at the outer third of the long, completely infuscated joint; the tube is nearly four times as long as wide, tapered outwardly and with a small row of spinous teeth at base followed by several hair tufts; the anal segment has a dorsal plate, the

ventral brush without tufts before the barred area; the comb is as in the mature larva, of many small teeth, finely divided at tip. A first-stage larva was also sent. It has the antennal tuft at the middle of the joint, eyes round, head slightly smoky blackish; air tube infuscated outwardly, ventral brush absent, comb a row of large, thorn-shaped, undivided spines. Disregarding the very generalized condition of the first stage, this larva presents a remarkable change at the last stage. It would almost suggest a mixture of species, though I have no reason to doubt the accuracy of Messrs. Dupree and Morgan's excellent work. The eggs are said to be laid in boat-shaped masses (Science, n. s., XVI, 1036, 1902), and this at once suggests the *pipiens* type of larva with long tube and antennal tuft at outer third of joint. The young larvæ before me bear out this expectation, but the mature larva is strangely transformed. It must be a reversion to a primitive condition, somewhat like the first stage form of these larvæ of the *pipiens* group. The peculiar modification of the air tube pecten is even more surprising.

Larva.—(Pl. II, Fig. 4.) Head rounded, narrowed somewhat before, brown, darker on the vertex; eyes black, transverse; antennæ rather long, slender, uniform, with a small tuft at the middle, not before the middle; pale brown. Body normal, thorax enlarged, flattened, abdomen submoniliform, the hairs moderate, diminishing posteriorly. Lateral comb of eighth segment a diffuse patch of about 50 small spines with digitately divided tips in four irregular rows (Pl. II, Fig. 4, *B*). Air tube about three times as long as wide, tapering outwardly, the usual pecten teeth modified into a row of rather long hairs, the outer ones longest. Anal segment about as long as wide, ringed by the plate, brown infuscated like the tube, tuft and brush normal, the latter continued before the barred area by little tufts to the base of the segment. Anal processes normal.

Culex triseriatus *Say.*

Eggs obtained at Center Harbor, N. H., from captive females; alcoholic larvæ handed me by Professor Smith from Mr. J. Turner Brakeley's cultures at Lahaway, N. J. The eggs are laid at the edge of the water, just below the surface, in rows, patches or singly, adherent to the edge. The winter is passed in this state (Science, n. s., XVI, 672, 1902).

Egg.—Elliptical, nearly cylindrical, uniform, no visible flattening; both ends rounded, the micropylar one more abruptly and with a

small, clear, annular cushion at the tip, the other end more obliquely narrowed, but rounded at tip. Sculpturing in the form of a heavy, rounded reticulation, at the margin showing clear projecting granules especially at the ends; centrally the clear covering layer is smoother. Also more or less smeared with mucilage. Length, .8 mm., diameter, .2 mm.

Larva.—(Pl. III, Fig. 1.) Head well rounded, flattened, normal, brown, darker on vertex, eyes black, transverse; antennæ long, but very slender, uniform, a single-haired tuft at the middle, brown. Body normal, hairs moderate, diminishing posteriorly. Air tube short, about three times as long as broad, tapering outwardly, brown, its pecten teeth considerably elongate, but with spines basally, not produced into hairs (Pl. III, Fig. 1, *A*). Lateral comb of the eighth segment a small patch of about twelve spines, stout and much elongated, with finely digitately divided tips, in an irregular double row. Anal segment about as long as wide, dorsally plated, the plate reaching below the middle of the sides; tuft and brush normal, the latter continued slightly before the barred area. Anal processes four, moderate.

Culex signifer *Coquillett.*

This abnormal larva was given me by Professor Smith. The peculiar dorsal platings at the end of the body occur also in *Corethra brakeleyi*, but not in any other Culicid that I have yet seen. The antennæ are usually short and the head is elongate suggesting *Uranotænia* and *Anopheles*. It is surprising to find these characters in a *Culex*.

Larva.—(Pl. III, Fig. 2.) Head rounded, elliptical, slightly flattened, black; antennæ very short, not exceeding the mouth brush, with a small tuft before the middle; eyes black, transverse. Body of normal shape, thorax enlarged into a thick disk, abdomen submoniliform; hairs moderate, those of the first two abdominal segments more strongly tufted than the succeeding ones. Seventh abdominal segment with a round dorsal plate, incised anteriorly; an angulated, transverse plate on the eighth segment anteriorly, reaching below the middle of the sides, with the comb at its posterior border but not united with it. Comb of long spines in a transverse row and a shorter second row (Pl. III, Fig. 2, *B*), finely divided on the side next the body. Air tube about three times as long as wide, slender and rather small, without pecten, but a hair tuft beyond the middle. A small, linear, transverse, lateral plate on the last segment anteriorly. Segment tri-

gonate, ringed by its plate, tuft and brush normal, the latter confined to the barred area. No anal processes visible in any of the specimens before me.

Culex bimaculatus *Coquillett.*

Larva.—(Pl. III, Fig. 3.) Head nearly straight behind, widest just behind the eyes, narrowed before, flattened; antennæ slender, rather small, uniform, colorless, with small tuft a little before the middle of the joint. Eyes large, black, transverse; mouth brush rather short, normal; head pale brown, darker on posterior edge, the neck black. Thorax roundedly enlarged, abdomen submoniliform, moderate, normal. Meso- and metathoracic hair tufts short, copious, brush-like, the upper mesothoracic tubercle bearing a long hair. Abdominal hairs rather slight, becoming single and diminishing posteriorly. Air tube two and a half times as long as wide, slightly tapered, conic; a double row of stout, pointed teeth, two- or three-branched at base, the outer tooth distant; a fan-shaped hair tuft within the row at about its middle. Lateral comb a patch of about thirty small spines with digitately divided tips, three rows deep. Anal segment ringed by the plate, brush and tuft of rather short hairs, but unusually thick, the separate pencils being thickened at base and apparently the hairs of the pencil basally consolidated; no tufts before the barred area. Anal finger-shaped processes very long, narrowly pointed, four, normal.

Sent me by Messrs. Dupree and Morgan from Baton Rouge, La.

EXPLANATION OF PLATES.

PLATE II.

Fig. 1. *Culex tæniorhynchus* WIED. *A*, Pecten tooth of air tube, enlarged. *B*, Comb teeth of eighth abdominal segment, enlarged.

Fig. 2. *Stegomyia fasciata* FAB. Comb teeth of eighth abdominal segment, for comparison with Fig. 1, *B*.

Fig. 3. *Culex nigritulus* ZETT. *A* and *B*, as in Fig. 1.

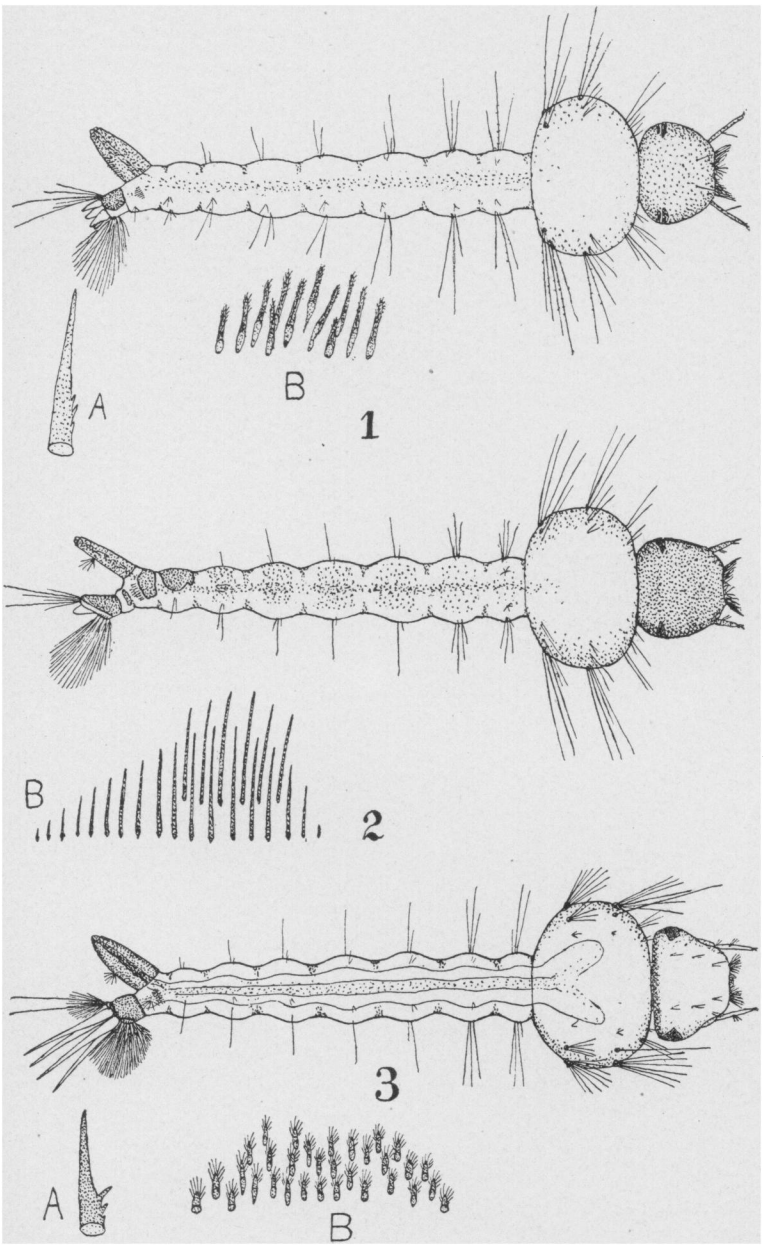
Fig. 4. *Culex consobrinus* DESV. *A* and *B*, as in Fig. 1.

PLATE III.

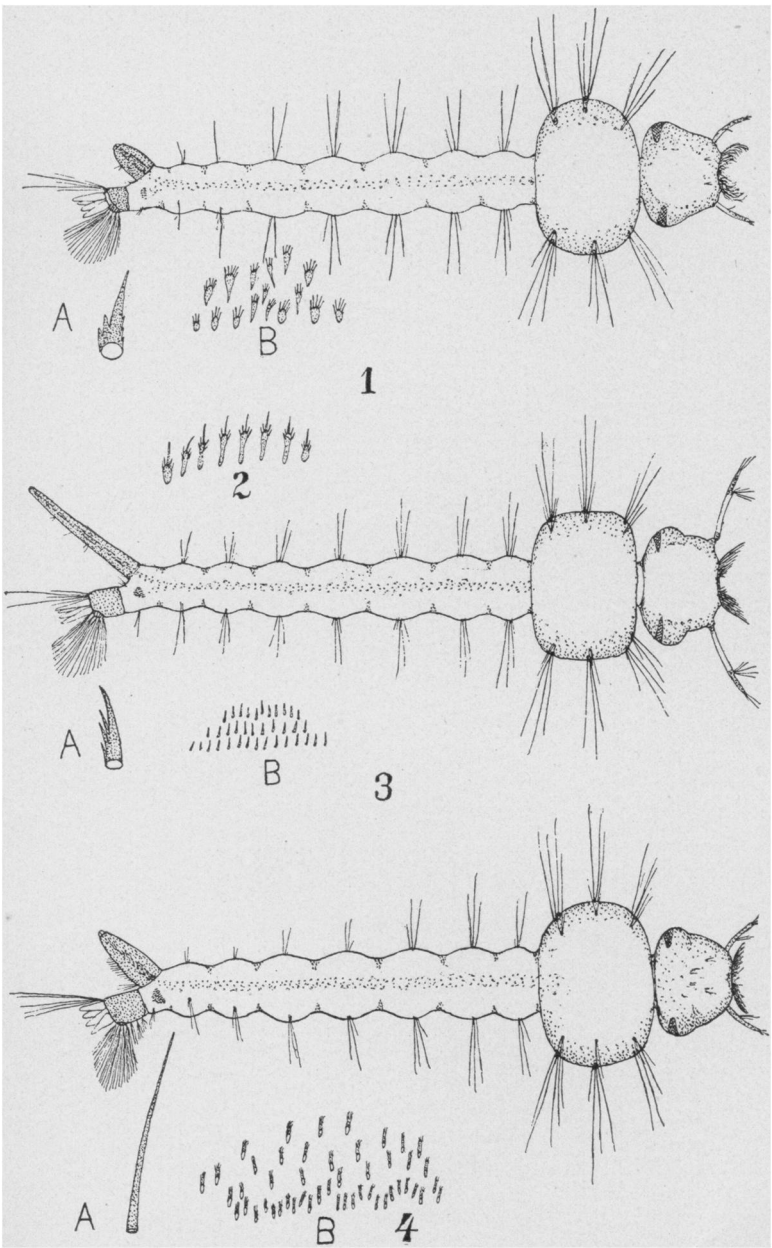
Fig. 1. *Culex triseriatus* SAY. *A*, Pecten tooth of air tube. *B*, Comb of eighth abdominal segment.

Fig. 2. *Culex signifer* COQ. *B*, Comb of eighth abdominal segment.

Fig. 3. *Culex bimaculatus* COQ. *A* and *B*, as in Fig. 1.



1, *Culex tæniorhynchus*; 2, *Stegomyia fasciata*; 3, *Culex nigritulus*.



1, *Culex triseriatus*; 2, *Culex signifer*; 3, *Culex bimaculatus*; 4, *Culex consobrinus*.